

Inductive Analysis of Water & Justice

Inducing themes: Line by line coding

AA	AB	AC	AD	AE
1	PHOENIX			
2	Fair: Statement:	Theme I	Theme II	Theme III
3	1 if you live in the city, everyone is entitled to the water	everyone is entitled to water	water rights vary by location	
4	satellite communities don't get water	water rights vary by location		
5	0 don't know enough about it	don't know		
6	state controls that issue	government control of water		
7	1 Az does good job of cutting deals with Ca and Nv.	government-enabled access to water		
8	Colorado river portions	natural water source		
9	1 Get a lot more than other areas that are more populated	beneficial water allotment	differential water distribution	
10	Get more than our fair share	beneficial water allotment	unfair water allotment	
11	0 We pay for City of Phoenix water	water requires payment	unfair water payment	pay for the water of other:
12	1 I don't have any issues with it	no problems with water situation		
13	0 Colorado River is main source we get more than we should	natural water source	differential water distribution	unfair water allotment
14	We should be paying dearly for it because it comes from reservation land	water payment should correspond	water rights vary by location	water rights should follow
15	0 Way too many people not enough water	insufficient water		
16	Don't know if possibility for it being fair	impossible to create fair water situation		
17	Tribes don't have access to water running through their land	water rights vary by location		
18	0 cant comment	don't know		
19	1 I've never been limited	no problems with water situation		
20	would not be opposed to restrictions	further restrictions potentially beneficial		
21	2 could become an issue	water rights could be an issue in the future		
22	2 don't have anything to compare it to	no source of comparison - don't know		
23	2 couldn't say	don't know		
24	2 not familiar with water rights	don't know		
25	0 not fairly proportioned with other states and communities	differential water distribution	water rights vary by location	unfair water allotment

Code development: Constant comparison

	FIJI		PHOENIX - LAVEEN		BOLIVIA	
1						
2	All Themes: Count: ↓		All Themes: Count ↓		Themes (all): Count ↓	
3	improved infrastructure	20	ample water	6	difficult to obtain	20
4	past inadequacy of water system	11	water requires payment	6	aguaterros undependable	18
5	everyone has access to water	10	not aware of any unfair water situation	5	water scarcity	18
6	government-enabled access to water	10	unfair water distribution	4	water inconsistency	17
7	home access	7	differential water distribution	3	procedural difficulties	9
8	improved storage	6	never had water-related problems	3	social inequality	9
9	natural water source	5	consistent access to water	2	aguaterros proud	7
10	fair access to water	4	fair water prices	2	aguaterros unfair	7
11	private water control	4	government supplies water	2	water is essential	7
12	comparatively consistent access to water	3	inconsistent water pressure	2	inactive leadership	6
13	poor water quality	3	longstanding water rights	2	no "walking"	5
14	ample water	2	unfair water usage	2	water quality	5
15	consistent access to water	2	water is inexpensive	2	water needed for household tasks	4
16	fair/equal amount of water	2	water rights accompany property ownership	2	"suffering from water"	3
17	water causes illness	2	city possesses rights to unused water	1	good situation	3
18	water causes stomach illness	2	city water price is compatible	1	payment required for water	3
19	water supply contingent on natural factors	2	comparatively inexpensive water	1	active leadership	2
20	cooperative effort ensures water access	1	consensus about farmers' right to water	1	incapable leadership	2
21	excess water	1	consensus about own water rights	1	many aguaterros	2
22	fair/equal water pressure	1	does not understand why people buy bottled water	1	natural cause	2
23	government control of water	1	everyone has access	1	unfaithful leadership	2
24	households need water	1	fair access	1	aguaterros unpredictable	1
25	infrastructure leads to access	1	fair to pay for water according to usage	1	infrastructure	1

Theme codebook example

Theme: Aguateros - difficult to obtain (14)

Detailed Description: This theme includes all statements that specifically address aguateros and difficulties respondents face in trying to obtain water from them. [This theme only includes statements regarding the aguateros appearing but failing to provide easy access to water.]

Inclusion Criteria: Statements that indicate the respondent would like access to water through the aguateros more often than they are currently receiving it. Include statements the aguatero does show up but it is at an inconvenient time, that it takes a long time, that the service is only available for a short time, or that one has to wait.

Exclusion Criteria: Statements describing difficulty in accessing water that do not attribute it to aguateros. Exclude if states or implies that the aguatero does not show up (i.e., no amount of effort would enable the respondent to acquire water).

Typical Exemplars: "Only some people get to buy water, other aguateros don't even want to sell us water"

Atypical Exemplars: "Sometimes the aguateros just don't stop [to sell us water]"

Close but no: "Sometimes [aguateros] bring water, sometimes [aguateros] don't bring water" and "It's unjust that we have to get water from the aguatero" and "water truck drivers are very proud"

Statements:

- Because we have to get water from the water-truck (driver)
- sometimes they deliver the water at 5:00am
- sometimes at 10 am we are still waiting [for water delivery]
- The aguatero turns his back on us [ie. Ignores us when we need water]

Comment [U3]: I guess "don't stop" should go into "don't come" if we are only going to pick one category for clarity's sake.

Comment [RS4]: Does the statement "Sometimes the aguateros just don't stop [to sell us water]" fall into both the "private water trucks do not come" and "private water trucks make water difficult to obtain" categories? The statement implies that the water trucks come but don't stop. As the definitions are written right now, I believe it does fall into both.

Comment [RS5]: Respondent Bolivia6 has 5 statements. This first, #18, says "A veces no traen" translated "Sometimes they [aguateros] don't bring water." Statement #19 says "Hay que rogar" translated "We have to beg [to acquire water]." While the translation doesn't specifically highlight aguateros, looking at all the statements combined this appears to refer to the theme "water truck drivers make water difficult to obtain." Do you agree?

Comment [U6]: I think we have to wait should be difficult to obtain and... a veces no traen should be does not come. I think those are 2 separate statements

Comment [U7]: Yes the begging is definitely about aguateros, and should be coded as "difficult to obtain"

Comment [RS8]: Along the same lines as the above question, Bolivia 11 has 3 statements, the first is "Hay que esperar" translated "We have to wait" then "A veces no traen" translated "Sometimes they [the aguateros] do not bring water." Why are these split up into different statements? The first translation doesn't specifically acknowledge aguateros but taken together with the other statements, it does.

Theme Analysis Results

Table 1: Top three most frequently mentioned themes in Cochabamba, Bolivia

Theme	Respondents reporting (%)
Unreliable water vendors	46.3
Water scarcity	41.5
Water is essential	17.0

Table 2: Top three most frequently mentioned themes in Viti Levu, Fiji

Theme	Respondents reporting (%)
Improved infrastructure	32.4
Inadequacy of past water system	18.9
Everyone has access to water	18.9

Table 3: Top three most frequently mentioned themes in Wellington and Piopio, New Zealand

Theme	Respondents reporting (%)
Everyone has access to water	28.9
Easy access to water	28.4
Ample water	27.2

Table 4: Top three most frequently mentioned themes in Phoenix, United States

Theme	Respondents reporting (%)
Differential allotment/distribution	16.7
Water pricing	15.0
Water restrictions	11.7

Wutich, A. A. Brewis, S. Sigurdsson, R. Stotts, A. York. Fairness and the Human Right to Water: A Preliminary Cross-cultural Theory. In *The Social Life of Water in a Time of Crisis*. (Ed., John Wagner). Berghahn Books.

Meta-theme codebook example

This document reflects:

revisions by Amber Wutich on 9/9/10 and 9/21/10
revisions by Sveinn Sigurdsson on 9/8/10 and 9/13/10
revisions by Rhian Stott on 9/21/10 and 9/22/10

Metathemes:

- (1) Access to water
- (2) Fairness in water situation
- (3) Infrastructure
- (4) Role of government
- (5) Water cost
- (6) Water quality
- (7) Water quantity
- (8) Water source
- (9) Water rights

Code Use:

- Code at the level of the statement, not the respondent (to enhance accuracy)
- Code each statement for all relevant metacodes
- Not all statements will get a meta code; leave blank if no meta code applies
- Each statement can theoretically have between 0 and 9 metacodes applied
- Tabulate codes at the level of the respondent (e.g., each respondent gets a 0/1 for each code; then calculate % respondents who received each code)

Code Definitions:

Theme: Access to water

Detailed Description: This meta-theme covers all statements that entail accessing water.

Inclusion Criteria: Access to water includes discussions of differential access to water; consistency in water access; locations where water is obtained; difficulties or lack thereof in obtaining water; ability to access water via water trucks; un/fairness in water access, and whether you can access water in the home/tap.

Exclusion Criteria: Descriptions of water amounts, need for water, water quality, water use, or water infrastructure without mentioning access.

Typical Exemplars: everyone has access to water; inconsistent water access

Atypical Exemplars: procedural difficulties (in obtaining water)

Close but no: pipes around the village

Refining the meta-theme codebook

	A	B	C	D	E	F	G
1	Access	<i>(Definition was revised/clarified for second round of kappa coding)</i>					
2		Amber Wutich					
3		No		Yes			
4	Rhian Stott	No	30	2	Kappa Score = .600		
5		Yes	6	10	"Good"		
6							
7	Fairness	<i>(Definition was revised/clarified for second round of kappa coding)</i>					
8		Amber Wutich					
9		No		Yes			
10	Rhian Stott	No	35	0	Kappa Score = .766		
11		Yes	4	9	"Good"		
12							
13	Government						
14		Amber Wutich					
15		No		Yes			
16	Rhian Stott	No	38	1	Kappa Score = .786		
17		Yes	2	7	"Very Good"		
18							
19	Cost						
20		Amber Wutich					
21		No		Yes			
22	Rhian Stott	No	37	0	Kappa Score = 1.000		
23		Yes	0	1	"Perfect"		
24							
25	Infrastructure	<i>(Definition was revised/clarified for second round of kappa coding)</i>					
26		Amber Wutich					
27		No		Yes			
28	Rhian Stott	No	40	1	Kappa Score = .621		
29		Yes	3	4	"Good"		
30							

Meta-analysis Results

Table 5: Percentage of respondents reporting nine metathemes in four international sites

Metatheme	Bolivia	Fiji	New Zealand	Phoenix
Water access	63.4	56.8	76.5	36.7
Water quantity	53.7	13.5	30.9	38.3
Equality and equity	17.1	10.8	37.0	40.0
Government	26.8	27.0	23.5	23.3
Infrastructure	7.3	45.9	17.3	5.0
Water cost	7.3	2.7	29.6	20.0
Water quality	7.3	8.1	19.8	1.7
Water rights	19.5	8.1	9.9	23.3
Water source	7.3	10.8	39.5	10.0

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Methodological Comparison of Focus Group & Questionnaire Narratives

Table 1. Codes, Code Definitions, and Kappa Scores for Nine Sensitive Policy-related Topics

Code	Definition	Kappa Score
Competence-related topic		
Model construction	Decision rules for model calculations (i.e., formulas, estimations, algorithms)	.87 (very good)
Framing bias	A preconceived policy goal, perspective, or opinion is expressed in WaterSim presentation or scenarios	.75 (good)
Scientific validity	Scientific adequacy of the model (especially accuracy, reliability, precision)	.66 (good)
Risk-related topic		
Adequacy of water supply	The need to preserve present water supplies to make them last in the future	.66 (good)
Unsustainable consumption	The need for change in water use behaviors to conserve present water supplies	1.00 (perfect)
Vulnerable communities	Phoenix's water system is vulnerable to shocks or complete breakdown	.66 (good)
Gatekeeping topic		
Science-policy collaboration	Events/processes that foster collaboration between scientists and decision makers on water policy issues	1.00 (perfect)
Agenda setting	The idea that decision-making agendas should be coproduced by decision makers and scientists	.88 (very good)
Political uncertainty	Unpredictable factors related to politics, legislation, and industry that make water decision making difficult	.66 (good)

Wutich, A., T. Lant, D. White, K. Larson, and M. Gartin. (2010) Comparing Focus Group and Individual Responses on Sensitive Topics: A Study of Water Decision-makers in a Desert City. *Field Methods*. 22(1): 88-110.

Table 2. An Example of a Coded Focus Group Excerpt

Bales's (1950) Codes for Interaction Process Analysis	Focus Group Text Excerpt	Substantive Codes for Gatekeeping Topics
Asks for orientation	Respondent 5: What about adjudications?	Political uncertainty
Gives orientation	Because there's going to be a significant amount of water adjudicated to [Indian Tribe] ...	
Gives opinion	Respondent 7: Once those adjudications are actualized ... that is going to make a big impact on communities such as [New Town] that are building ... water that is not going to be available.	Political uncertainty
Shows antagonism	Respondent 1: This is just kind of the perfect thing for the people that are involved for the desalinization ... to promote piping water from the Gulf [of Mexico] ...	Agenda setting
Gives orientation	Respondent 7: And that was stated in many of the Governor's Drought Taskforce—	Science-policy collaboration
Shows antagonism, gives opinion	Respondent 1: It's just the same old dysfunctional way we look at water in the Southwest.	
Agrees	Respondent 7: Right!	Agenda setting
Gives orientation	Respondent 8: Bringing this information in front of city council members ... presenting this scenario at the state level ...	
Asks for opinion	Is there a way to show like worst and best case scenarios on the same graph so people can get it?	
Shows solidarity	Respondent 3: [nods] Nice.	

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Gatekeeping comparison

The respondent stated in the questionnaire format, “I could see that it would be valuable to have all of this information included in one location, rather than having to gather it all from various agencies.” In the

In the focus group, the same respondent elaborated on this idea:

As a municipality, I would have to go to like, like CAP [agency] [Respondent 3 looks at respondent 6.], and then I would have to go to DWR [agency] [gestures to respondent 8], and then I would have to go to SRP [agency] [gestures to respondent 3], and so we would have to get all the information [Respondent 4 nods.]; we have to go to all the information. We have to go to all these places. So if there was one place where all the information was [Respondent 8 nods.], that would be very useful. [Respondent 1 nods.]

Risk comparison

In the questionnaire format, one policy maker stated, “The sensitivity to drought shows that there could be a high risk involved in this [future strategy] if groundwater sources are not continued to be developed.” However, in the focus group, this same

However, in the focus group, this same policy maker stated, “No one’s got a crystal ball; no one can determine what’s going to happen in the future,” and then, “[smiles] Let’s find something that gives us good news [Respondent 7 and respondent 6 laugh; respondent 4 smiles].” In this typical case, a respondent who expressed the idea that